2/13/2001 Jlab Ion Pump Controller Evaluation Meeting

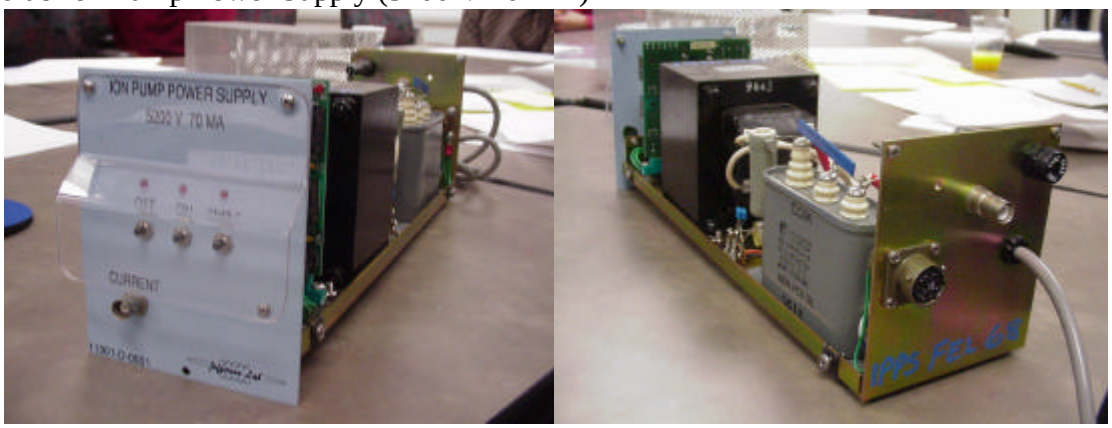
Trip Report – J. Tang

The Goals of the meeting was

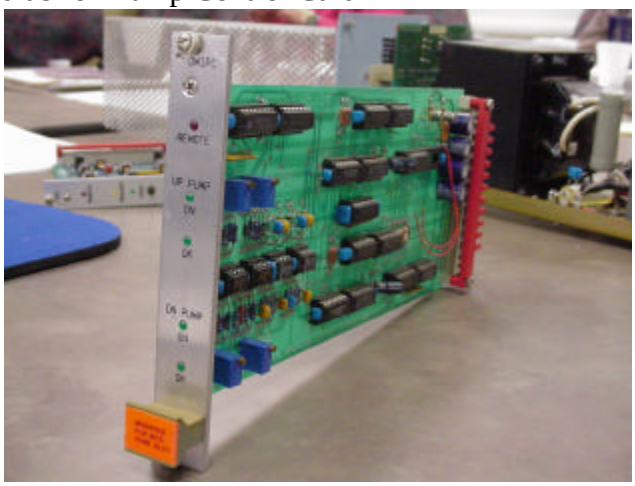
- Determine suitability of JLAB controllers for CCL/DTL/Ring & Transport Subsystems
- Review gauge and ion pump controller specifications
- Discuss turbopump station design

JLAB Ion Pump Power Supply and Its Control Card Overview by K. Jordan

Jlab Ion Pump Power Supply (5200 V 70 MA)



Jlab Ion Pump Control Card



Live JLAB Ion Pump Controllers for FEL at JLAB

Unique Capability Claimed

- All Analog: log amp provides 1.5 volts per decade output
  - Vacuum range 10E-10 torr < P < 10E-6 torr
    - 1.5 volts per decade of vacuum change analog output
  - Allows for "slow" interlock at 3*10E-9 and "fast" response 1*10E-7
    - These trip levels are set in beamline and waveguide control cards
- Works for both RF and valve interlock
- Response time < 1 millisecond for 4 decades of vacuum change
- Start/Over current protection
  - 15 minute start full current then >10 milliamp trip
  - 70 mAmp start current
  - FET current surge bypass – log amp protection
- Full remote control
  ON / OFF / Reset

400 IP PS in field (loss one per year) currently

$600 - $750 per ion pump ps (Not including control card)

Results of the meeting

- Ion Pump Controller Modifications
  - 200 mA, 10mA 100% duty
  - large ion pumps
  - log amp resolution
  - cold cathode control
  - Control through PLC vs Control Card
  - Check response time for PS at 10-7 Torr, 10-9 Torr

- Commercial Gauge Controller
  - Verify response time at 10-7 Torr

- TMPS Considerations
  - Include PIV in station control
  - Add manual valve I/O suitable
  - Standalone local control

SNS Vacuum Groups at JLAB, LANL and BNL will make the decision (What Ion Pump and Gauge Controllers will be used for SNS) in a month we hope.